



Report 96-209

Longline Fishing Vessel *Warlock*

Mount Maunganui

20 August 1996

Abstract

On Tuesday, 20 August 1996, at approximately 1730 hours, the longline fishing vessel *Warlock* was overcome by seas near the entrance to Tauranga Harbour and subsequently washed up onto Mount Maunganui Beach. The two crew members on board lost their lives and the vessel was extensively damaged in the accident. The cause of the accident was not identified conclusively.

Transport Accident Investigation Commission

Marine Accident Report 96-209

Vessel Particulars

Name:	<i>Warlock</i>
Registered:	Tauranga
Type:	Longline fishing
Class:	X (Fishing Inshore) (under 12 m)
Limits:	New Zealand territorial sea
Length:	12.0 m
Breadth:	4.6 m
Draft:	1.8 m
Gross Tonnage:	18 tonnes
Construction:	Steel
Built:	Whangarei 1986 (hull), completed and launched 1993
Power plant:	One Gardner 6LXB 97 kW diesel driving a single fixed-pitch propeller
Speed:	8 knots maximum (1100 rpm) 6.5 knots service (950 rpm)
Operator:	Owner
Location:	Approaches to Tauranga Harbour, Bay of Plenty
Date and time:	Tuesday, 20 August 1996, at approximately 1730 hours ¹
Persons on board:	Crew: 2
Injuries:	Crew: 2 (fatal)
Nature of damage:	Superstructure and deck equipment destroyed
Investigator in Charge:	T M Burfoot

¹ All times in this report are NZST (UTC + 12 hours)

1. Factual Information

1.1 History of the voyage

- 1.1.1 On Thursday, 15 August 1996, the fishing vessel *Warlock* departed from the Port of Tauranga for fishing grounds in the vicinity of White Island. On board were the Master, who was the owner's son, and one deck-hand. It was the Master's intention to remain at sea, fishing, for approximately one week.
- 1.1.2 On Monday, 19 August, the Master telephoned his father and indicated his intention to complete one more "set" the next day and return to Tauranga earlier than scheduled. Only one set per day was being completed due to the hydraulic winch's slow recovery of the fishing gear (two sets per day were sometimes made).
- 1.1.3 At approximately 0500 hours on Tuesday, 20 August, the crew made one set, prepared and stowed their catch, and departed for Tauranga at approximately 1030 hours.
- 1.1.4 At 1419 hours the Master contacted Seacoms (a voluntary ship reporting organisation based in Tauranga) by VHF radio and reported that the *Warlock* was 22 nautical miles from Tauranga en route from White Island. The Seacoms duty operator asked the Master what the conditions were like. The Master replied "It's a bit roly-poly, I'll call you back when we get a bit closer to Tauranga".
- 1.1.5 At 1715 hours the Master called Seacoms and requested the time for low water at the Tauranga Harbour entrance. The duty operator informed him that low water was "in a few minutes, at 1719 hours". The Master's response indicated that this suited him well. When asked whether he had a good trip back, the Master replied "No". The Seacoms duty operator asked the Master to report in when the *Warlock* was inside the harbour and advised him to "take it easy in the entrance". The Master replied that he expected to be inside within 45 minutes and he would call then. The duty operator noted that the Master did not sound "his usual jovial self".
- 1.1.6 At approximately 1730 hours the Master telephoned his father and told him that he was approximately one nautical mile from his waypoint². The exact location of the waypoint is not known but is thought to have been in the region of the Fairway Beacon ("A" Beacon). When his father asked what the conditions were like out there, the Master replied that there was a three-metre swell running and it was "pretty ragged" coming past Schooner Rocks and the north end of Motiti Island. The Master also stated that he could not see any other boats on the radar. This was the last known contact with the *Warlock*.
- 1.1.7 At 1800 hours the Seacoms duty operator's shift ended. He telephoned the next shift operator and passed on that the *Warlock* was the only boat out and should be reporting in soon.
- 1.1.8 At approximately 1720 hours two residents of a beach-front house saw the *Warlock* appear from behind Motuotau Island (see Figure 1) heading across their view towards the harbour entrance. The couple were keen boat-watchers and kept binoculars handy for observing the variety of marine activities that frequented the sea area outside the harbour entrance.

² Co-ordinates entered into the vessel's GPS navigation system

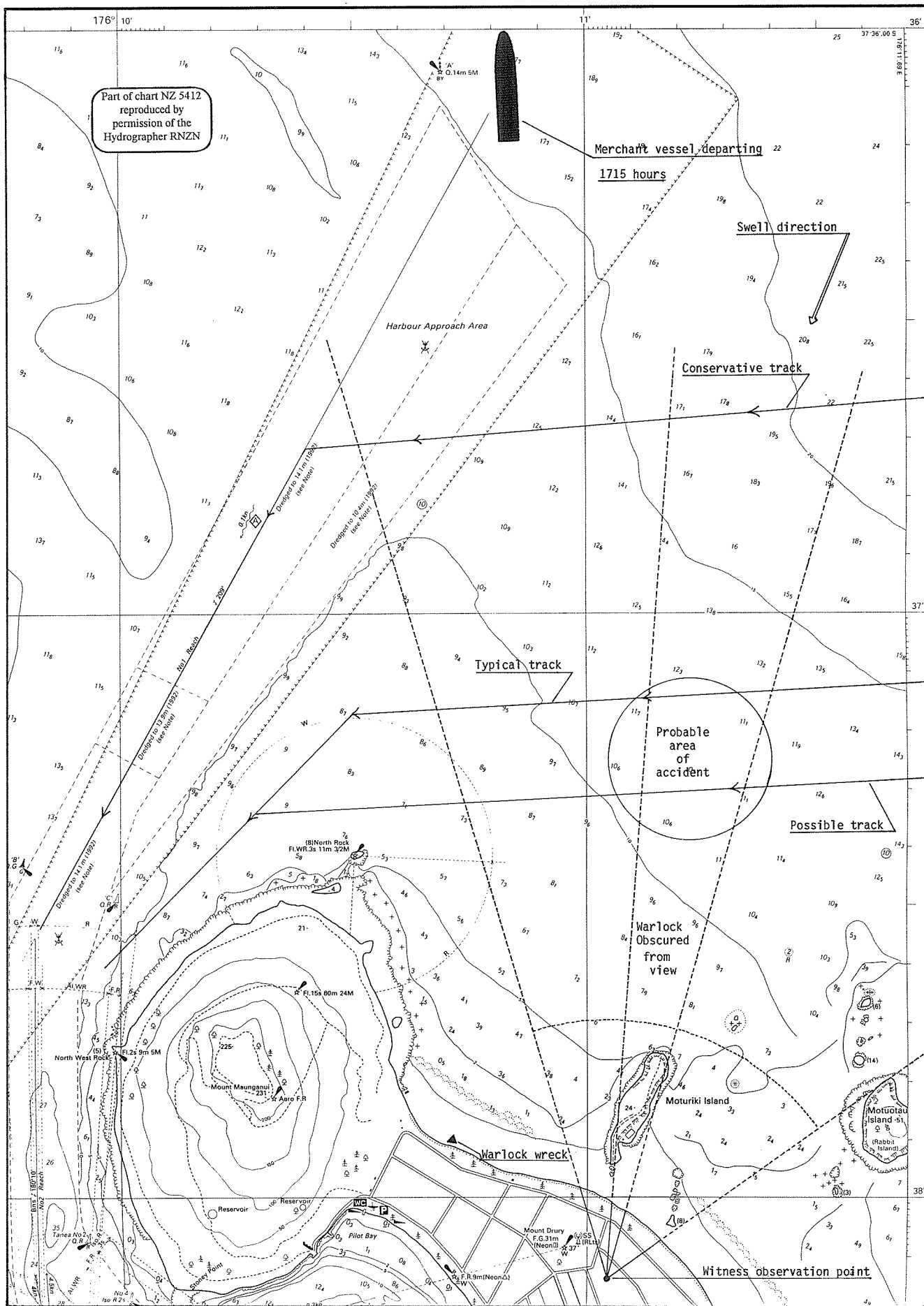


Figure 1
Approximate track and positions of note

- 1.1.9 One of the couple, who had worked on commercial fishing vessels in the past, estimated that the *Warlock* was making approximately seven knots. He observed the *Warlock's* hull and superstructure disappear each time the vessel dipped between waves. The *Warlock* did not appear to him to be shipping significant water on deck. The observer was familiar with the topography in the area and estimated that the *Warlock* was approximately 150 m to seaward of the rocks extending out from Motuotau Island, "quite close in" compared with other fishing vessels which he had observed approach the harbour from that direction.
- 1.1.10 At approximately 1730 hours the couple lost sight of the *Warlock* behind Moturiki Island. While waiting for it to reappear from the other side of the island they noticed an outbound ship in the harbour approach channel (the *Rangitoto*). Records taken from the *Rangitoto's* log book show that it would have been visible to the couple from approximately 1710 hours. The *Warlock* did not reappear from behind the island.
- 1.1.11 At approximately 2000 hours the Master's family, concerned that they had not heard from the *Warlock*, telephoned the fish processing factory where the *Warlock* was scheduled to unload its catch. A security guard at the factory reported that the *Warlock* had not arrived. A member of the Master's family telephoned the Police at 2009 hours and reported the vessel overdue.
- 1.1.12 Over the ensuing two hours the Police liaised with the Tauranga Volunteer Coastguard, Seacoms, the Tauranga Port Authority, Maritime Radio Operations in Wellington and the Search and Rescue (SAR) Marine Duty Officer, and established that the *Warlock* had not entered the harbour and that no contact had been made with the vessel since 1730 hours. At 2150 hours the Police, aided by Mount Maunganui Lifeguard Service staff, mounted a shoreline search for the *Warlock*.
- 1.1.13 At 2220 hours the *Warlock* was located upside down on Mount Maunganui's Ocean Beach. Flotsam from the vessel was found strewn several miles along the beach. A shoreline search failed to find the missing crew.
- 1.1.14 The wreck of the *Warlock* was salvaged and taken to a slipway, where it was inspected.
- 1.1.15 The crew's bodies were recovered some days after the accident.

1.2 Vessel information

- 1.2.1 The *Warlock* was an Aquarius 12 m Pelin launch constructed mainly from steel. The hull was built in Whangarei in 1986. The current owner purchased the hull and he and his son (the Master) completed the fit-out as a longline fishing vessel, launching it in February 1993.
- 1.2.2 The *Warlock* had a semi-planing hull, almost flat at the stern transforming to a deep Vee forward. It was powered by a single 97 kW Gardner diesel engine driving a fixed-pitch propeller, giving a maximum speed of eight knots and a service speed of 6.5 knots at 950 rpm. Diesel fuel was carried in two 1100 litre tanks, one either side of a fresh-water tank located aft of the engine room. Two banks of batteries, which were charged by two belt driven alternators, produced a 24 V power supply.
- 1.2.3 The bilge pumping arrangement in the engine room was serviced by an electrically driven centrifugal pump capable of automatic or manual switching. The pump could either draw clean water direct from the sea for deck washing, or bilge water via a chest of screw-down, non-return valves to pump out the engine room, fish hold or aft peak. A hand pump could also be used to pump out the fish hold.
- 1.2.4 The *Warlock* was fitted with hydraulic steering coupled to a semi-balanced plate rudder. The wheel would move the rudder from "lock to lock" in 6.5 turns.

- 1.2.5 The *Warlock's* engine room was located amidships with the accommodation forward of the engine room (See Figure 2.). The wheelhouse, located on top of the engine room, had a rear-facing, sliding door which opened onto the aft deck. Access to the accommodation and engine room was from inside the wheelhouse.
- 1.2.6 The fish hold was located aft of the fuel and fresh water tanks. It was fitted with removable pond boards, to prevent the catch from shifting, and an aluminium hatch cover. A smaller working hatch was located within the main hatch cover. There was no means of securing the main hatch cover, other than a lug for fitting a padlock. Its own weight was relied on to form a seal.

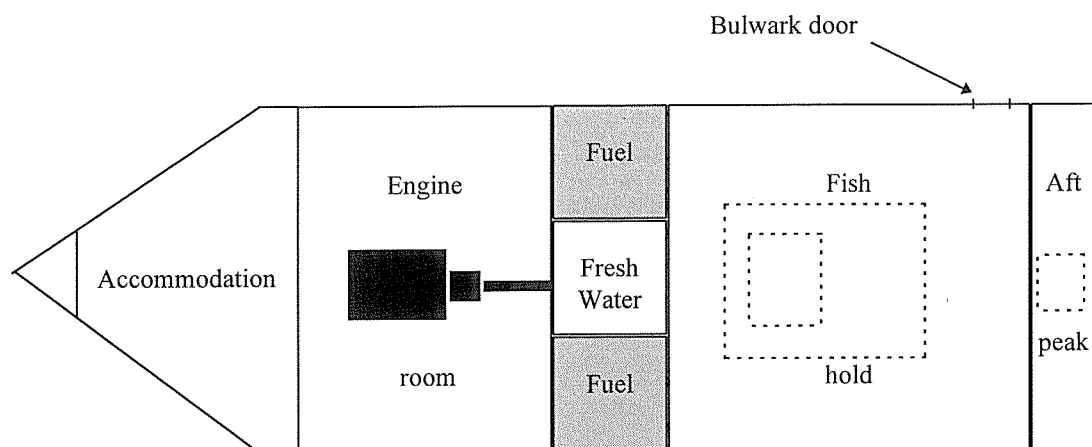


Figure 2
Under deck plan of *Warlock*
(Diagram not to scale)

- 1.2.7 The hydraulic steering ram and rudder top end bearing were located in the aft peak, a small space running the full width of the vessel behind the fish hold. Access was through a hatch on the aft deck.
- 1.2.8 The aft working deck was enclosed by solid steel bulwarks with freeing ports and a bulwark door on the starboard aft part of the vessel. A low stainless steel handrail was welded to the top of the bulwarks which extended to full-height handrails enclosing the raised foredeck, where a hydraulic anchor winch with drum was located. A pipe frame fitted near the stern accommodated the fishing buoys and associated equipment.
- 1.2.9 Navigation aids on board at the time of the accident included one radar, a depth sounder, GPS navigation, SSB and VHF radio, a magnetic compass (with automatic pilot) and a direction finder. A cellular telephone was fitted also.
- 1.2.10 Safety equipment carried included three life-jackets, and flares which were normally stowed under the wheelhouse seat. An EPIRB was mounted on a bracket at the rear of the wheelhouse, close to the door. A four-person life-raft was mounted in a bracket on top of the wheelhouse.

It was not fitted with a hydrostatic release; however a knife was kept handy to the helm position for cutting the life-raft loose in an emergency.

- 1.2.11 The size of the *Warlock's* rudder made it responsive to helm applications, although applying helm took some time. Former skippers recalled several instances where the aft deck had become awash, but the water had cleared quickly through the freeing ports in the bulwarks. They considered sea conditions generated by 30 knot winds to be near the upper limit in which the *Warlock* could be operated safely.
- 1.2.12 The *Warlock* left Tauranga with approximately 2200 litres of diesel, 800 litres of fresh water, 2.5 tonnes of ice and 250 kg of bait. It was estimated that approximately 1700 litres of diesel, 400 litres of fresh water and negligible ice remained on the return trip, and there were approximately two tonnes of fish. The return loading should not have adversely affected the *Warlock's* stability.

1.3 Crew information

- 1.3.1 The Master had been at sea for 15 years; two of which were served in the Royal New Zealand Navy; the remainder in the fishing industry. He obtained a New Zealand Commercial Launchmaster Certificate in 1991, New Zealand Coastal Master and Second Class Diesel Trawler Engineer certificates in 1994 and operated a variety of fishing vessels over the ensuing years. He had operated the *Warlock* for the first two seasons after its launching, and then moved on to spend two years working as Master on a larger vessel further offshore. The accident trip was the Master's first trip back on the *Warlock*.
- 1.3.2 The deck-hand held a Qualified Fishing Deck-hand Certificate and had been employed on the *Warlock* since 1993, when the vessel was launched. He had applied to sit for New Zealand Coastal Master and 2nd Class Diesel Trawler Engineer Certificates.

1.4 Weather information

- 1.4.1 The weather forecast for the day of the accident was for a 25 knot north-east wind, rising to 35 knots in the afternoon with the sea becoming very rough, a north-east swell rising to two metres and poor visibility in occasional rain showers. The outlook was for the wind backing to the north-west and maintaining 35 knots.
- 1.4.2 The weather recorded at the Harbour Signal Station for 1600 hours on 20 August was north-north-east wind at 35 knots, overcast and raining. At 2000 hours the weather was recorded as northerly wind at 40 knots, overcast and raining.
- 1.4.3 A wave recorder located near the Fairway Beacon recorded an average (all wave) height of one metre with a maximum wave height of 2.6 m recorded between 1700 and 1800 hours on 20 August.
- 1.4.4 The couple who observed the *Warlock* crossing between Motuotau and Moturiki Islands stated that there was heavy surf on the beach and regular "large" waves were breaking further out. Although visibility was reduced by sea spray and occasional rain showers, they were able to make out the maroon colour of the *Warlock's* hull and observe the merchant vessel in the channel fairway. This indicated that the visibility was at least two nautical miles at the time of the accident.

1.5 Survey and inspection information

- 1.5.1 The *Warlock* was registered as under 12 m and therefore did not require to be issued with a Certificate of Survey.
- 1.5.2 The *Warlock* had spent some time in heavy surf before coming to rest upside down on the beach. As a result, the deck equipment and fittings suffered extensive damage. The roof of the wheelhouse was separated from the main structure and was found near where the *Warlock* came to rest. The bulwark door on the starboard side of the aft deck was not secured and had been bent at the hinges. The hull suffered superficial damage only. (See Figure 3.)
- 1.5.3 The rudder was set up approximately four centimetres. The steering-gear hydraulic ram was bent where it had been forced past its normal limits and contacted the steel bulkhead on which it was secured.



Figure 3
Warlock on the beach, after righting

- 1.5.4 Inspection of the engine indicated that it was running when the engine room became flooded. The engine had “hydraulicized”³, causing one of the piston connecting rods to bend. A substantial amount of salt water was found in the fuel tanks and in the fuel line up to the primary fuel filter; however, the secondary fuel filter yielded a clean sample of diesel oil, as did each individual fuel pump. Each fuel pump, when tested, was “firm”. The fuel rack was set in the mid-rpm range, corresponding to approximately 600 rpm. The gearbox was engaged in the “ahead” position.
- 1.5.5 A test conducted on the gearbox confirmed that it was serviceable. The hydraulic oil reservoir, which serviced the gearbox, hydraulic winches and steering system, was half-full of oil.
- 1.5.6 The four bilge non-return valves were found shut. The sea-cock was open to the pump.
- 1.5.7 The electrical switch panels in the wheelhouse were damaged, many of the switches having been broken off. The radar was in “Standby” mode; however, the damage which it, and all of the other wheelhouse equipment, sustained made it impracticable to determine the operating status of each unit at the time of the accident.
- 1.5.8 The life-raft had been inflated, but had suffered extensive damage to the canopy and was partially deflated. Two life-jackets and the EPIRB were found washed up on the beach. The third life-jacket was found in the engine room. The EPIRB had not been activated. A test confirmed that it would have functioned had its antenna not been broken off.

2. Analysis

- 2.1 Although the cause of the *Warlock* foundering was not established it appears that the crew did not have time to send a Mayday, use flares, launch the life-raft, don life-jackets, or activate the EPIRB. This suggests that whatever the cause, the onset of the initial event was swift. Given the vessel’s close proximity to shallow water, and the sea conditions at the time, it is likely that the vessel was overcome by a large wave and capsized.
- 2.2 Judging by the damage to the life-raft, it was probably wrenched from its bracket and the inflation system self-activated while the vessel was upside down in the surf, rather than having been activated by the crew.
- 2.3 The sea conditions at the time of the accident were marginal for the *Warlock* to operate in safety; however, the vessel had operated in worse conditions in the past. The Master was familiar with the *Warlock*’s handling characteristics, and with the sea conditions experienced in the approaches to Tauranga Harbour. It would have been uncharacteristic for him to have been caught by a large wave unless there were other contributing factors.
- 2.4 Evidence suggests that the engine and gearbox were operating normally at the time of the accident. A clean sample of fuel was found in the engine’s secondary filter and each fuel pump was “firm” indicating that there was no air in the fuel system. There was nothing unusual about the distribution of weights within the vessel and no evidence to suggest that any of the *Warlock*’s compartments had become flooded prior to the capsizing. The damage to the steering system is likely to have resulted from the rudder striking the sea-bed while the vessel was in the surf. There were no witness marks on the rudder consistent with it having been struck by an object other than the sea-bed.

³Water has entered a cylinder(s) by way of either the scavenge air or exhaust trunks, then through the inlet or exhaust valves into the cylinder chamber. As water in the cylinder chamber cannot be compressed, like air, the momentum of the engine can cause piston disintegration, and/or distortion of the connecting rods and crankshaft.

- 2.5 The condition of the *Warlock's* hull, engine room and the deck fittings, albeit in their damaged state, indicated that it was a sturdy and well-maintained vessel.
- 2.6 The timing of the *Warlock's* disappearance behind Moturiki Island, the Master's telephone call to his father (stating that he was one mile off his waypoint), and the location of the wreck (see Figure 1.), provide a basis for determining a reasonably accurate position at which the initial event occurred.
- 2.7 It could not be determined how close to Motuotau Island the *Warlock* passed on her track towards the harbour entrance. Distance is difficult to judge across water, and the witness's judgement may have been affected by his use of binoculars; although he had observed other vessels traverse the same route and was sure that the *Warlock* was "quite close in".
- 2.8 The *Warlock* may have set closer inshore than the Master intended; alternatively the Master may have been keeping close in to the coast to seek shelter from the forecast north-west change. As the *Warlock* approached the harbour entrance the swells would have been standing up in the shallow water and the *Warlock* would have required careful conning in those sea conditions. If the *Warlock* was as close in as the witness stated, then the risk of the vessel being overcome by seas was significantly increased.
- 2.9 The Master had had a tiring trip back from White Island, as evidenced by his comments to the Seacoms operator, and to his father. The timing of events indicates that the accident occurred shortly after the Master made the second telephone call to his father. Fatigue from spending long hours at the helm in adverse sea conditions was likely to have affected the Master's ability to maintain vigilance. A distraction, such as the telephone call, or the bulwark door coming loose, may have been enough for the Master not to notice a wave standing up in the shallows.
- 2.10 Judging by the Master's injuries, it is likely that he and the deck hand were in the wheelhouse when the vessel capsized, and that they were rendered unconscious and drowned.

3. Findings

- 3.1 The *Warlock* was manned as required by the Shipping (Manning of Fishing Boats) Regulations 1986, and was not required to hold a Certificate of Survey.
- 3.2 The *Warlock* was a seaworthy and well-maintained vessel.
- 3.3 The sea conditions were marginal for the *Warlock* to operate in safety.
- 3.4 The *Warlock* may have been closer inshore than the Master realised.
- 3.5 The *Warlock* was capable of normal operation at the time of the accident.
- 3.6 The vessel being overwhelmed by seas and capsizing was the most likely cause of the accident.

19 February 1997

M F Dunphy
Chief Commissioner

Glossary of Marine Abbreviations and Terms

AC	alternating current
aft	rear of the vessel
beam	width of a vessel
bilge	space for the collection of surplus liquid
bridge	structure from where a vessel is navigated and directed
bulkhead	nautical term for wall
bus	an arrangement of copper conductors (Bus bars) within a switchboard, from which the circuits are supplied
cable	0.1 of a nautical mile
chart datum	zero height referred to on a marine chart
command	take over-all responsibility for the vessel
conduct	in control of the vessel
conning	another term for “has conduct” or “in control”
DC	direct current
deckhead	nautical term for roof
dog	cleat or device for securing water-tight openings
draft	depth of the vessel in the water
EPIRB	Emergency Position Indicating Radio Beacon
even keel	draft forward equals the draft aft
freeboard	distance from the waterline to the deck edge
free surface	effect where liquids are free to flow within its compartment
freshet	term used to describe an increase of water level in the river due to rain in the mountains
focsle	forecastle (raised structure on the bow of a vessel)
GM	metacentric height (measure of a vessel’s statical stability)
GoM	fluid metacentric height (taking account the effect of free surface)
GPS	Global Positioning System
GS	general service
heel	angle of tilt caused by external forces
hove-to	when a vessel is slowed or stopped and lying at an angle to the sea which affords the safest and most comfortable ride
Hz	Hertz (cycles)
IMO	International Maritime Organisation
ISO	International Standards Organisation
kW	kilowatt
list	angle of tilt caused by internal distribution of weights
m	metres
MSA	Maritime Safety Authority
NRCC	National Rescue Co-ordination Centre

point	measure of direction (one point = 11¼ degrees of arc)
press	force a tank to overflow by using a pump
SAR	Search and Rescue
SOLAS	Safety Of Life At Sea convention
sounding	measure of the depth of a liquid
SSB	single-side-band radio
statical stability	measure of a vessel's stability in still water
supernumerary	non-fare-paying passenger
telegraph	device used to relay engine commands from bridge to engine room
ullage	distance from the top of a tank to the surface of the liquid in the tank
V	volts
VHF	very high frequency
windlass	winch used to raise a vessels anchor